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TO : The Files

DATE: 24 October 1958

FROM : SUBJECT: Trip Report - 152 50

1. On 15 October 1958 a trip was made to the to monitor Contract RD-605, Task Orders 1, 2, 3 and 4, currently in progress. Persons participating in the discussions were:

2. The progress of the antenna programs at appears to be very satisfactory. If the programs turn out as anticipated, a series of broadband antennas will be developed which will greatly surpass present equipment in scope and application possibilities.

3. Since Task Orders 1 and 4 require similar antenna feeds for both the inflatable and sectionalized metal parabolic antennas, the contractor is holding off on mechanical design work until a firm design is worked out for these feeds. The work to date on Tasks 1 and 4 has been largely confined to measurements and design work on feed configurations. The contractor at the present time has compiled a substantial file of test data and pattern measurements, and has developed several experimental feed designs. When the final feed design has been agreed upon, mechanical design work involving studies on stress analysis, supporting structure design, and bag design for the inflatable antennas will begin. The contractor has been asked to use a straightforward means of putting the sectionalized dishes together, without employing mechanical adjustments.

4. Task Order 2 covers the design and development of a high-gain unidirectional broadband logarithmically-periodic antenna for use with the CS-8 Search Receiver. The proposed frequency range to be covered by this antenna was 30 to 600 megacycles. This antenna is now mechanically complete and has been set up for inspection. The antenna appears to meet all requirements outlined in the specification in regards to its mechanical design.

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From the standpoint of measurements, the antenna has been only partially tested. At the present time, the frequency range of the antenna is 60 to 600 megacycles. Further studies will be made to lower the frequency limit of the antenna, as far as practical, and still maintain a usable VSWR for receiving applications over the 30 to 600 megacycle range. The main factor limiting the frequency range of the antenna is its size requirement, which specifies that the antenna shall be operated in an area 7 x 9 feet. The ultimate outcome of this task looks extremely promising for search application and the antenna is scheduled for delivery in about 4 weeks.

5. Task Order 3 covers the development of broadband antennas, filters, and detectors for the 50 megacycle to 40 kilomegacycle frequency range. To date, it appears that the [] crystal holders and [] crystal provides the best performance; further investigations are being made along this line. The above mentioned combination will provide a sensitivity of -53 db up to 10 kmc. In the 10 to 40 kmc range, the crystal holder may become a part of the antenna design. Attempts are being made to incorporate the filters for frequency determination directly into the antenna design. If this is not successful, high or low pass filters will be used.

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difficulty is being encountered with the periodic antenna printed-circuitry dielectric affecting the pattern characteristics. This difficulty is expected to be overcome by cutting out dielectric in various areas of the antenna.

6. The study program at this time looks very encouraging in view of present information. It is expected that all antennas will be of satisfactory size for clandestine use and that very few antennas, probably 6 or 7, will be needed to cover the entire 50 mc to 40 kmc range.

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